

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
4 August 2005 (04.08.2005)

PCT

(10) International Publication Number
WO 2005/070958 A2

(51) International Patent Classification⁷: **C07K 14/195**,
C12N 15/31, C07K 16/12, C12Q 1/68, A61K 39/02

(74) Agents: MESTROM, J., J., L. et al.; Intervet International
B.V., P.O. Box 31, NL-5830 AA Boxmeer (NL).

(21) International Application Number:
PCT/EP2005/000562

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HN, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SI, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(22) International Filing Date: 18 January 2005 (18.01.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

| | | |
|------------|------------------------------|----|
| 04100202.3 | 22 January 2004 (22.01.2004) | EP |
| 04100203.1 | 22 January 2004 (22.01.2004) | EP |
| 04100204.9 | 22 January 2004 (22.01.2004) | EP |
| 04100205.6 | 22 January 2004 (22.01.2004) | EP |
| 04100206.4 | 22 January 2004 (22.01.2004) | EP |
| 04100208.0 | 22 January 2004 (22.01.2004) | EP |
| 04100209.8 | 22 January 2004 (22.01.2004) | EP |
| 04100210.6 | 22 January 2004 (22.01.2004) | EP |
| 04100211.4 | 22 January 2004 (22.01.2004) | EP |

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (for all designated States except US): AKZO
NOBEL N.V. [NL/NL]; Velperweg 76, NL-6824 AB Am-
hem (NL).

Published:

— without international search report and to be republished
upon receipt of that report

(72) Inventor; and

(75) Inventor/Applicant (for US only): VERMEIJ, Paul
[NL/NL]; Lepelstraat 3, NL-5845 BK St. Anthonis (NL).

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: LAWSONIA INTRACELLULARIS SUBUNIT VACCINES

(57) Abstract: The present invention relates i.a. to nucleic acids encoding novel *Lawsonia intracellularis* proteins. It furthermore relates to DNA fragments, recombinant DNA molecules and live recombinant carriers comprising these sequences. Also it relates to host cells comprising such nucleic acids, DNA fragments, recombinant DNA molecules and live recombinant carriers. Moreover, the invention relates to proteins encoded by these nucleotide sequences and to their use for the manufacturing of vaccines. The invention also relates to vaccines for combating *Lawsonia intracellularis* infections and methods for the preparation thereof. Finally the invention relates to diagnostic tests for the detection of *Lawsonia intracellularis* antigens and of antibodies against *Lawsonia intracellularis*.



WO 2005/070958 A2